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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ALI, MOHAMMAD M

ART UNIT PAPER NUMBER

3744

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/631,927

Applicant(s)

HARA, SHINICHI

Examiner

Mohammad Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21,22,24-26 and 28-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21,22,24-26 and 28-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 01/03/05
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 21-22, 25-26, 28 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,000,227 to Kroeker, in view of U.S. Patent 5,813,233 to Okuda et al. and U.S. Patent 6,298,669 to Maruyama et al. Kroeker discloses applicant's basic inventive concept, a cooling system provided in a vacuum atmosphere (abstract), comprising a radiational member (142, FIG. 7) spaced apart (col 2, lines 45-47) from a rear surface of a cooled optical element (162, FIG. 7), substantially as claimed with the exception of a Peltier element contacting said radiational member with a heat absorbing surface (1b, FIG. 9), a detector for detecting temperature of the optical element (52-55, FIG. 27) as

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input to a controller (FIG. 28) for controlling the constant, reference temperature (col 17, lines 40-62) of the optical element at a predetermined, target value (col 18, lines 1-15), a heat transfer system contacted to a heat radiation surface of said Peltier element to flow a coolant via a circulation channel', a radiator block (3, FIG. 9) contained in the coolant channel and a shielding element (16, FIG. 8) for protection. Mamyama shows the use of a Peltier element (71, FIG. 7A) contacting a radiational member (72, FIG. 7A) with a heat absorbing surface and a heat transfer system (73, FIG. 7A) contacted to a heat radiation surface of said Peltier element to flow a coolant via a circulation channel (75, FIG. 7A) to be old in the thermoelectric refrigeration art. Okuda shows the use of a detector for detecting temperature of the optical element (52-55, FIG. 27) as input to a controller (FIG. 28) for controlling the constant, reference temperature (col 17, lines 40-62) of the optical element at a predetermined, target value (col 18, lines 1-15) and a shielding element (16, FIG. 8) for protection to be old in the thermoelectric cooling art. Therefore, it would have been obvious to one having ordinary skill in the art. at the time the invention was made from the teaching of Maruyama and Okuda to modify the system of Kroeker, by coupling a Peltier element to the radiational member and adding heat transfer system contacted to a heat radiation surface of said Peltier element to flow a coolant via a circulation channel enabling the radiation member temperature-controlled to a target temperature by operation control (Maruyama; col 1, lines 60-65), and by using a detector, a controller and a shielding element for protection in order to update

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the controlling system and protect the cooled object. Regarding the disclosure, "the temperature of the coolant is substantially the same as a temperature of the optical element" for the amendment portion of independent claim 21 is a functional recitation of the controller of Okuda et al., as disclosed in Fig. 27-29. The controller can attain any desired coolant temperature. The different cooling ranges chosen in claims 33-35 are also obvious choice of the individual skilled in the art since there is no criticality or unexpected result from it as the controller is able to attain any desired temperature range of the cooling fluid.

Claims 24 and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,000,227 to Kroeker, in view of U.S. Patent 5,813,233 to Okuda et al. and U.S. Patent 6,298,669 to Maruyama et al., as applied to claim 21 above, and further in view of U.S. Patent 6,098,408 to Levinson et al. Kroeker in view of Okuda and Maruyama discloses applicant's basic inventive concept, a radiation cooling system spaced apart from the cooled optical element, substantially as claimed with the exception of stating that the optical element cooled is a mirror having a light which passes through at a wavelength of 10-15 nm, said mirror being either a projection or illumination optical system and that the optical system is used for exposing an object to a pattern. Levinson shows a radially cooled mirror (col 1, line 55) having a light passing through it at a wavelength of 5-70 nm and used for exposing an object to a pattern (col 1, lines 20-22) to be old in the cooling art. Also, a mirror is an integral part of any projection or illumination optical system and this limitation bares no patentable

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weight on the specific cooling feature, which is claimed. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Levinson to modify the system of Kroeker in view of Okuda and Maruyama, by specifying the mirror, said mirror being either a projection or illumination optical system, as a cooled element in order to lessen the error in Optical temperature sensing.

Response to Arguments

Applicant's arguments filed 11/08/05 have been fully considered but they are not persuasive. The justification of rejection of amended portion of claim 21 has been narrated above in the rejection that the temperature of the coolant is substantially the same as the a temperature of the optical element is a functional recitation of the function of the controller of the Okuda et al. Thus, the amendment makes no difference for the claim so that it can be patented. Therefore, the rejections are proper. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be


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calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Ali whose telephone number is (571) 272-4806. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melba Bumgarner can be reached on (571) 272-4709. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Mohammad M. Ali
November 28, 2005

